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**PURE SPORES OF  
DAVAINE ANTHRAX  
IN DAMAGED TISSUE.**

**MICROBIAL ASSOCIATIONS**

**TRANSLATION NO.**

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PURE SPORES OF DAVAINÉ ANTHRAX IN DAMAGED TISSUE.  
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Following is a translation of an article by J. Basset in the French-language periodical Comptes Rendus Societe de Biologie (Reports of Biological Society) Vol 77, pp. 1517-1519.

I. With the pure spores of B. Chauvaei (unpublished experiences confirming the obtained results) one can inject subcutaneously in the guinea pig a quantity of spores corresponding to one hundred times the deadly dose of a culture, without provoking a notable disturbance. With the spores of Davaine one could not inject unpunished such a considerable quantity (see preceding article), although 1/100 cc of spores corresponding to twice the deadly dose of a spores-bacteria mixture does not provoke infection, and 1/60 cc only rarely.

When, instead of injecting the spores in normal tissue, the injection takes place in damaged tissue, a minimal quantity of spores is sufficient to provoke the disease. All the guinea pigs inoculated in the calf through the skin with 1/150 to 1/300 cc of spores to which is added lactic acid (2 drops) diluted in 0.5 cc salt water are dead in two to three days. These results confirm the ingestion experiments of Bouquet (January 1924).

II. Microbial associations permit in normal tissue the growth of anaerobic toxic spores (as has been known a long time). Is it the same with Davaine spores? Not at all.

Pasteur demonstrated in 1878 with a spores-bacteria culture that anthrax associated with other germs is not determinant for an anthrax infection, and his conclusions were confirmed by a number of authors experimenting with pathogenic and non-pathogenic germs.

I used a non-pathogenic staphylococcus, of which 1 cc injected in the peritoneum or under the skin of a guinea pig does not provoke any damage. The experiments with the mixed culture and the pure spores give very comparable results: I give only the results obtained with the spores-bacteria mixture, of which 1/120 cc kills a 600 gram guinea pig in 2½ to 3 days. The amount of staphylococcus mixed with the anthrax culture was constantly the same: 0.5 cc.

Subcutaneous injections. With 1/120 or 1/60 cc anthrax, no illness. With 1/8 cc, death in 3½ days, usual anthrax symptoms; blood culture, pure B. anthracis.

Intra-peritoneal injections through the skin. With 1/8 and 1/4 cc anthrax, all animals survive.

These experiments confirm as a whole the results of the authors; they show in the meantime that there is nothing absolute and that it all depends on the quantity of anthrax associated with the strange germs.

They confirm again the great resistance of the peritoneum. The inhibiting action of the associating germs (with reservation for *B. pyocyaneus*) was made clear by Issaëff (1894). It is a function of hyperdiapedesis and this explication is the more satisfactory as we have observed before, than the affluence of polynuclears in the anthrax-damaged tissue, provided the infection is not too serious and death does not come too quickly.

Without going too much into detail on the lesions, I shall indicate certain observations made in numerous autopsies. In approximately 1/8 of the cases the spleen is not hypertrophic nor visibly modified, notwithstanding being full of anthrax. The hypertrophy or non-hypertrophy does not depend on the length of the infection, nor on the intensity of the edema. A very extensive edema is often found in the sub-peritoneal connective tissue at the entrance of the pelvis and under the loins, around the lumbar lymph glands often hemorrhagic and sometimes encircled by extravasation of blood.

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